

Chiu Fan Lee

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RESEARCH INTERESTS

Theoretical biological physics – Universality in Biology

Key topics: Cell and tissue dynamics, intracellular phase separation, amyloid fibrilisation, soft and active matter physics, protein complex self-assembly

EDUCATION

Doctor of Philosophy in Physics 10/2001 – 04/2005

University of Oxford

Dissertation: Classical and Quantum Systems: Games and Information (supervisor: Professor Neil Johnson)

- Joint recipient of the Arthur Cooke Prize at the Sub-Department of Condensed Matter Physics
- Natural Sciences and Engineering Research Council Postgraduate Scholarships A & B (Canada)
- Overseas Research Students Award (British Council, UK)
- Clarendon Fund Bursary (Oxford)

Master of Advanced Study in Mathematics with Distinction 10/2000 – 06/2001

University of Cambridge

Part III Essay: Quantum Algebraic-Geometric Codes (supervisor: Professor Yuri Suhov)

- Cambridge Commonwealth Bursary

Bachelor of Science (First Class Joint Honours in Mathematics and Physics) 09/1997 – 05/2000

McGill University

Honours project: Elliptic curves over the complex plane (supervisor: Professor Henri Darmon)

- Horace Watson Medal & Prize for highest standing in physics (CGPA: **3.95/4.0**)

ACADEMIC CAREER

Sabbatical leave 10/2022 – 09/2023

Institute of Cancer Research, London, UK

Reader in Theoretical Biophysics 09/2022 – present

Department of Bioengineering, Imperial College London, UK

Senior Lecturer 09/2018 – 08/2022

Department of Bioengineering, Imperial College London, UK

Lecturer 05/2012 – 08/2018

Department of Bioengineering, Imperial College London, UK

Distinguished PKS Postdoctoral Fellow 10/2009 – 04/2012

Max Planck Institute for the Physics of Complex Systems (MPI-PKS), Germany

Glasstone Research Fellow 10/2006 – 09/2009

Physics Department, University of Oxford, UK

Junior Research Fellow 10/2006 – 09/2009

Jesus College, Oxford, UK

Weir Junior Research Fellow 10/2003 – 09/2006

University College, Oxford, UK

Research Assistant 03/2003 – 09/2003

Intelligent Systems Division, NASA Ames Research Center, USA

Research Assistant Summer 2001

Institute for Quantum Computing, University of Waterloo, Canada

NSERC Undergraduate Research Assistant Summer 2000

Department of Mathematics and Statistics, McGill University, Canada

NSERC Undergraduate Research Assistant Summer 1999

Department of Combinatorics and Optimization, University of Waterloo, Canada

CAREER BREAK

Parental leave (4.5 months)

10/2018 – 02/2019

GRANTS

- Active jamming: Fact or fiction 11/2020 – 08/2023
PI: C.F. Lee, and co-PI: T. Bertrand
Funder: Leverhulme Trust Research Grant
Value: 134,142 GBP
- Modelling the impact of Acute Myeloid Leukemia on the microenvironment of bone marrow T cells, aiming to improve T cell-based immunotherapies 03/2021 – 02/2022
PI: C. Pospori, co-PI: C.F. Lee, and co-PI: C. Lo Celso
Funder: CRUK Imperial Centre & NIHR Imperial BRC Data Science in Cancer Research Award 2020
Value: 24,863 GBP
- Modelling morphological dynamics in self-repairing tissues 10/2015 – 02/2016
PI: G. Sena, and co-PI: C.F. Lee
Funder: Engineering and Physical Sciences Research Council (EPSRC) Physics of Life NetworkPlus Collaboration
Value: 4800 GBP
- Scientific Meeting Grant (Physics of Emergent Behaviour II: From Molecules to Planets) 07/2015
PI: C.F. Lee, co-PI: R. Endres, and co-PI: G. Sena
Funder: The Company of Biologists
Value: 2000 GBP
- Distributive discrete molecular dynamics simulations for the study of amyloid diseases 10/2008 – 04/2009
PI: C.F. Lee
Funder: John Fell OUP Fund, University of Oxford
Value: 5000 GBP

INDEPENDENT FELLOWSHIPS

- **Distinguished PKS Postdoctoral Fellow** 10/2009 – 04/2012
3-year independent salary support, Max Planck Institute for the Physics of Complex Systems, Germany
- **Glasstone Research Fellow** 10/2006 – 09/2009
3-year independent salary support plus 15000 GBP research support Physics Department, University of Oxford, UK
- **Weir Junior Research Fellow** 10/2003 – 09/2006
3-year independent salary support, University College, Oxford, UK

CONFERENCE & MEETING ORGANISATION

- Institute of Physics (IOP) conference: Physics of Emergence IV: Phase Transitions in Biology (Harrogate, UK, 03/2023)
- IOP conference: Physics Meets Biology 2021 (University of Oxford, 07/2021)
- IOP conference: Physics of Emergence III: from Origin of Life to Multicellularity (Imperial College London, 07/2021)
- Fundamentals of Growing Active Matter (Higgs Centre for Theoretical Physics, 03/2021)
- Launch event of the Imperial Network of Excellence: Physics of Life (Imperial College London, 07/2019)
- Summer school “Current topics in active fluids: theory and experiments” at the Centre for Doctoral Training in Fluid Dynamics across Scales (Imperial College London, 07/2018)
- International meeting – “Field Theories come to Life” (Imperial College London, 04/2018)
- Complex Systems Dynamics Meeting - Non-equilibrium polymer dynamics (Imperial College London, 06/2017)

- 'Theoretical Physics of Life' workshop (Imperial College London, 06/2017)
- Summer school at the Centre for Doctoral Training in Fluid Dynamics across Scales (Imperial College London, 07/2016)
- Complex Systems Dynamics Meeting - Foundations of statistical mechanics (Imperial College London, 12/2015)
- Complex Systems Dynamics Meeting - Phase transitions and critical phenomena in biology (Imperial College London, 09/2015)
- IOP conference: Physics of Emergent Behaviour II - from molecules to planets (Science Museum, London, 07/2015)
- Chair of the Biomaterials Session at the BioMedEng14 conference (Imperial College London, 09/2014)
- Complex Systems Dynamics Meeting - Dynamics of Active Matter (Imperial College London, 05/2014)

LEADERSHIP & ADMINISTRATIVE ROLES

Learned society

- **Committee member**, Biological Physics Group, Institute of Physics, UK (2016 – present)

University-wide

- **Co-organiser of Physics of Life Network Seminar Series**, Imperial College (2019 – present)
- **Co-Director**, Imperial Network of Excellence: Physics of Life (2019 – present)
- **Member of the Faculty Education Committee**, Faculty of Engineering, Imperial College (2019 – 2022)
- **Director of Outreach**, Centre for Doctoral Training in Fluid Dynamics across Scales at Imperial College (2016 – 2019)
- **Member of the Management Committee** and the **Research Committee**, Centre for Doctoral Training in Fluid Dynamics across Scales at Imperial College (2016 – 2019)
- **Organiser of the Biological Physics Journal Club**, Imperial College (2016 – 2018)

Departmental

- **Director of Postgraduate Studies (Taught)**, Department of Bioengineering, Imperial College London (09/2019 – 09/2022)
- **Member of the Teaching COVID-Response Team**, Department of Bioengineering, Imperial College London (03/2020 – 09/2022)
- **Deputy Director of Postgraduate Studies (Research)**, Department of Bioengineering, Imperial College London (01/2018 – 09/2018)
- **Undergraduate Group Project Coordinator**, Department of Bioengineering, Imperial College London (2017 – 2018)
- **Undergraduate Exchange Programme Coordinator**, Department of Bioengineering, Imperial College London (2014 – 2017)
- **Member of the Athena Swan Committee** (2014 - 2015) in the Department of Bioengineering (Bronze medal awarded in 2015)
- **Organiser of the Departmental Seminar Series**, Department of Bioengineering, Imperial College London (2013)
- **PhD cohort mentor**, Department of Bioengineering, Imperial College London (2013 – 2016)
- **Organiser of the Internal Seminar Series**, Biological Physics Department, Max Planck Institute for the Physics of Complex Systems (2011 – 2012)

PROFESSIONAL ACTIVITIES

- Grant reviewer for the European Research Council, European Commission, BBSRC, Royal Society (London), French National Research Agency (ANR), and Australian Research Council
- PhD examiner: Imperial College (10/2019, 12/2019, 01/2021, 12/2021, 05/2023), King's College London (06/2023), Sorbonne University (12/2022), University College London (09/2020), University of Cambridge (12/2019), and University of Warwick (05/2019)

- PhD thesis committee member: Francis Cricks Institute
- MPhil external examiner: University of Cambridge
- Referee for several scientific journals including Nature, Science, Proc. Natl. Acad. Sci. U.S.A, Nature Physics, Physical Review Letters, Physical Review X, Molecular Cell, Chemical Reviews, Journal of the American Chemical Society, and many others

MEMBERSHIP OF PROFESSIONAL BODIES

- Member, Institute of Physics, UK (since 06/2012)
- Member, The Thomas Young Centre, London UK

TEACHING EXPERIENCE

New course development

- Four-lecture course on multiphase flow at the Centre for Doctoral Training in Fluid Mechanics across the Scales at Imperial College London
- 20-lecture course on mathematical methods for the 1st year students in the Department of Bioengineering at Imperial College London
- 10-lecture course on mathematical methods for the 2nd year students in the Department of Bioengineering at Imperial College London

Taught courses

Highlight: Nominated for a Student Academic Choice Award in the "Best Teaching for Undergraduates" category

- 2nd year Bioengineering Mathematics: alpha module (2013-2018, 2019-2022)
Bioengineering Department, Imperial College London
Duration: 5 weeks of 2 lecture hours and one study group per week
Student number: 120
- 1st year Bioengineering Mathematics: Beta and Gamma modules (2012-2018, 2019-2022), Delta module (2019-2022)
Bioengineering Department, Imperial College London
Duration: 10 weeks of 2 lecture hours and one study group per week
Student number: 120
- Multiphase Flow (2015-2018)
Centre for Doctoral Training in Fluid Mechanics across the Scales, Imperial College London
Duration: 4 lecture hours and 2 tutorial hours
Student number: around 10

Current group members

PhD students

Highlight: Nominated for an Imperial College Union Award in the "Outstanding PhD Supervision" category

- John-Antonio Argyriadis (10/2020 – present, EPSRC funded)
Project: Intracellular phase separation
- Patrick Jentsch (12/2020 – present, department funded)
Project: Universality in active matter
- Sulaimaan Lim (10/2021 – present, department funded)
1st supervisor: Dr Julien Vermot
Project: Reverse engineering cardiac valve development
- Alastair Phelan (10/2022 – present, department funded)
Project: Biophysical study of haematopoiesis
- Samuel Whitby (10/2021 – present, President's PhD Scholarship)
Project: Information Theoretic Analysis of Biomolecular Condensates

Alumni

Postdoctoral fellow

- Dr Shalabh Anand (11/2020 – 10/2022, Leverhulme Trust funded)
Project: Active jamming
- Dr Andrea Cairoli (10/2016 – 11/2019, 1851 Exhibition Research Fellow)
Project: Active Lévy Matter

PhD students

- Andrew Killeen (awaiting VIVA, 10/2019 – 02/2023, funded by EPSRC Fluids CDT)
2nd supervisor: Dr Thibault Bertrand
Project: Emergent Dynamics of Confluent Tissues in Homeostasis and Growth
Prize: IOP Early Career Researcher Best Talk Prize 2021
- Dr Benjamin Partridge (10/2017 – 03/2022, funded by BBSRC DTP)
2nd supervisor: Prof Cristina Lo Celso
Thesis: A theoretical and empirical investigation into active particle systems: Implications for haematopoietic cell dynamics in the bone marrow of mice
- Dr David Nesbitt (10/2015 – 11/2019, funded by EPSRC Fluids CDT)
2nd supervisor: Dr Gunnar Pruessner
Thesis: Exploring the Behaviour of Two-Dimensional Dry Polar Active Fluids in a Dense Regime
- Dr Alice Spenlehauer (11/2013 – 10/2019, funded by BBSRC DTP)
1st supervisor: Prof Darryl Overby
Thesis: The mechanobiology of the inner wall endothelium of Schlemm's canal
- Dr Jean-David Wurtz (10/2013 – 09/2017, department funded)
Thesis: Phase Transitions in the Cell Cytoplasm: A Theoretical Investigation

Masters students

- Jay Sivasirikarul
Project: A Study on Pattern Formation in Zebrafish
- Tarane Subramaniam
Project: Modelling the Motility and Proliferative Dynamics of Acute Myeloid Leukaemia in the Bone Marrow
- Amar Dhanda (2021, MEng)
Project: Modelling Clinical Progression of Alzheimer's Disease: 68% of Demented Participant's are expected to transition from Mild Cognitive Impairment to Severe Alzheimer's Disease within 4 years 5 months
- Conor Murphy (2021, MSc)
Project: Evidence for a dominant Haematopoietic Stem Cell Megakaryocyte-CXCL12 Abundant Reticular Cell-Sinusoid Localisation in the Murine Bone Marrow
2nd supervisor: Prof Cristina Lo Celso
- Joao Pereira (2021, MEng)
Project: A Mapping Between The Renormalization Group and Deep Learning
- Alisdair Stevenson (2021, MEng)
Project: Biophysical Modelling of the Pathogenesis of Alzheimer's Disease
- Mathilde Placek (2018, MEng)
Project: Computational modelling of wound healing
- Benjamin Partridge (2016, MRes)
Project: The physics of stem cell dynamics and localisation in the bone marrow environment
2nd supervisor: Dr Cristina Lo Celso
- Maria Bogdanov (2016, MEng exchange student from Grenoble)
Project: Music of the cell
2nd supervisor: Prof. Kim Parker
- Xiao Yao (2016, MEng)
Project: Modelling morphological dynamics in self-repairing tissues
- David Nesbitt (2015, MRes)
Project: Modelling tissue regeneration as an active fluid
- Christopher Morris (2015, MSc)
Project: Modelling amyloid fibril-induced membrane leakage

- Thibault Enderlé (2014, MSc)
Project: Modelling morphological dynamics in self-repairing tissues
Secondary supervisor: Dr. Giovanni Sena
- Yuqiao Zheng (2013, MSc)
Project: Measuring the porosity structure and permeability of the mineralised tissue supporting the articular cartilage layer in a mouse model of osteoarthritis disease
1st supervisor: Dr. Massimo Marenzana
- Kyle Davies (2008, Oxford) & Matthew Gibb (2007, Oxford)
Project: Systems Biology – a DNA microarray perspective
2nd supervisor: Professor David Vaux
- Neil Boyd (2007, Oxford)
Theoretical studies of amyloid fiber formation
2nd supervisor: Professor Neil Johnson

Teaching experience at Oxford University

- Tutorials: Atomic Physics (3rd year), Radiation and Matter (3rd year), Fluid Flow (3rd year), Mathematical Methods (1st year)
Duties: conducting problem classes, setting and marking beginning-of-term tests, setting and marking weekly assignments, and conducting end-of-year revision classes
- Revision classes: Structure & Dynamics of Condensed Matter Physics (3rd year), Kinetic Theory and Thermodynamics (2nd year), Statistical Mechanics (2nd year), Quantum Mechanics (2nd year), Mathematical Methods (2nd year)

INVITED PRESENTATIONS

Highlight: 67 invited talks

Conferences, workshops, meetings, symposia, colloquia, and summer schools

24. T.B.D. 10/23
Biological condensates: cellular mechanisms governed by phase transitions, Isaac Newton Institute, UK
23. Conversion-limited phase separation in biomolecular condensation 05/23
Gutenberg Workshop on 'Multivalent Interactions in Aging', Mainz, Germany
22. Conversion-limited phase separation in biomolecular condensation 03/23
International Symposium on Membrane-Less Organelles in Cell Life and Disease, Seville, Spain
21. T.B.D. [Trip cancelled due to COVID-19] 09/20
The 58th Annual Meeting of the Biophysical Society of Japan, Gunma, Japan
20. Physics of active emulsions: Implications for stress granule formation 10/19
Modeling phase separation in health and disease: from nano- to meso-scale, CECAM Workshop, Toulouse, France
19. Physics of active emulsions: Implications for stress granule formation 03/19
Focus session on "Liquid-liquid phase separation in cellular processes", American Physical Society March Meeting, Boston, USA
18. Physics of passive and active emulsions 12/18
Phase Separated Assemblies in Cell Biology, The Banbury Center of Cold Spring Harbor Laboratory, New York, USA
17. Hydrodynamics of passive and active fluids 07/18
UK Fluids Summer School 2018: Current topics in active fluids: Theory and Experiments, Imperial College London, UK
16. Physics of non-equilibrium phase separation: Implications for stress granule formation 06/18
The Leon Glass and Michael C. Mackey Diamond Symposium, Montreal, Canada
15. Physics of non-equilibrium phase separation: Implications for stress granule formation 05/18
EMBO | EMBL Symposium: Cellular Mechanisms Driven by Liquid Phase Separation, Heidelberg, Germany
14. Novel physics arising from phase transitions in biology 10/17
UCL's Institute for the Physics of Living Systems Students Retreat, Bath, UK
13. Universalities in Biology 08/16
Symposium "Complex Systems and Networks", Department of Physics, TU Dresden, Germany
12. A reaction-diffusion-advection model of collective motion 07/16
UK Fluids Summer School 2016: Interscale interactions in fluid mechanics and beyond, Imperial College London, UK
11. Universality in Soft Active Matter 03/16
Departmental colloquium, Department of Physics, University of Oregon, USA
10. Universalities in Biology 01/16
Biology-Physics Interface Workshop, Chicheley Hall, Chicheley, UK
9. The biophysics of amyloid disease pathogenesis 07/13
UK-Japan Symposium: Mathematical and computational modelling of disease mechanisms, Imperial College London, UK
8. Physics of Protein Aggregation 04/11
Scientific Symposium on Centrosomes, Grobtothen, Germany
7. Spatial organization of the cell cytoplasm: Protein gradients and liquid-liquid phase separation in the *C. elegans* embryo 01/11
Biological Physics Group Retreat, Oberwiesenthal, Germany

6. Predicting Rare Events in Chemical Reactions 02/10
Biological Physics Group Retreat, Spindleruv Mlyn, Czech Republic
5. Protein amyloid self-assembly: Thermodynamics and kinetics 04/09
COXIC Workshop, Institute for Mathematical Sciences, Imperial College London, UK
4. Protein amyloid self-assembly 10/06
The Eighth Bioinformatics Day on 'Computational Problems in Bioinformatics', University of Oxford, UK
3. Product distribution theory for control of multi-agent systems 09/05
Natural Computing Applications Forum Meeting, University of Southampton, UK
2. Quantum game theory 04/05
Oxford Imperial Quantum Meeting, Imperial College London, UK
1. Cellular dynamics on networks 02/05
The First Annual International Conference on Cell Dynamics, University of Hokkaido, Japan

Seminars

43. Diversity of phase transitions in active fluids 07/23
Statistical Physics of Soft Matter and Biological Systems Group, TU Berlin, Germany
42. Polar Fluctuations Lead to Extensile Nematic Behavior in Confluent Tissues 05/23
Fluids and Materials seminar series, University of Bristol, UK
41. Conversion-limited phase separation in biological cells 06/22
Centre for Materials Physics, Durham University, UK
40. Dynamic control of intracellular organisation through phase separation 01/22
CRUK Convergence Science Centre seminar series, Imperial College London / Institute of Cancer Research, UK
39. Diversity of phase transitions in active fluids 06/21
Department of Physics, Vrije Universiteit Amsterdam, The Netherlands
38. Novel physics arising from phase transitions in biology 06/20
TYC online seminar series, Thomas Young Centre, London
37. Exploring novel phase transitions in compressible active fluids using a lattice Boltzmann method 02/20
Biological Physics Division, Max Planck Institute for the Physics of Complex Systems, Germany
36. Universality in active fluids 02/19
Theoretical Physics Group, Department of Physics, Warwick University
35. Universality in active matter 02/18
Soft Matter Group, Department of Applied Mathematics and Theoretical Physics (DAMTP), University of Cambridge, UK
34. Universality in active matter 11/17
CANES (Cross-Disciplinary Approaches to Non-Equilibrium Systems) seminar series, King's College London, UK
33. Parameter-free modelling of living matter 07/17
Integrative Biology Section Meetings, MRC London Institute of Medical Sciences, UK
32. Protein amyloid self-assembly: thermodynamics, kinetics, and pathogenesis 10/16
Institute of Integrative Biology, University of Liverpool, UK
31. Universality in Living Matter 10/16
Department of Physics, University of Amsterdam, The Netherlands
30. Universality in Soft Active Matter 03/16
Complexity Science seminar series, Department of Mathematics, Queen Mary University of London, UK

29. Phase separation in biology: Cell function and role in diseases 03/16
Soft and Living Matter Group, Department of Chemical and Biological Engineering, Princeton University, USA
28. Universality in Soft Active Matter 03/16
Centre for the Physics of Materials, Department of Physics, McGill University, Canada
27. Phase separation in biology: Cell function & role in diseases 03/16
Research seminar, Department of Physics, University of Oregon, USA
26. Universality in Soft Active Matter 02/16
Department of Applied Mathematics and Theoretical Physics, University of Cambridge, UK
25. Universalities in Biology: “Cutting Through the Chaos” 10/15
Soft Matter Physics Group, University of Surrey, UK
24. Universalities in Biology: “Cutting Through the Chaos” 10/15
Institute for the Physics of Living Systems, University College London, UK
23. Organelles, emulsions, phenotypes: Distributions in heterogeneous environments 10/14
Biological Physics Division, Max Planck Institute for the Physics of Complex Systems, Germany
22. Phase transitions in cell biology 10/13
Bioengineering Seminar Series, Queen Mary University of London, UK
21. Stochastic dynamics of reaction-diffusion models: An epidemic model case study 02/13
Warwick Complexity Forum, Warwick University, UK
20. Protein amyloid fibrils: Fascinating biopolymers that kill 11/12
Bioengineering Department, Imperial College London, UK
19. Stochastic dynamics of reaction-diffusion models: An epidemic model case study 10/12
Biomathematics Working Group, Mathematics Department, Imperial College London, UK
18. Spatial organization of the cell cytoplasm: P granule localisation in the *C. elegans* embryo 04/12
Laboratoire J. A. Dieudonné, Université de Nice–Sophia Antipolis, France
17. Self-organisation in molecular biology 01/12
School of Mathematics and Statistics, University of Sheffield, UK
16. Self-organisation in biology: Modelling of cytoplasmic compartmentalisation 12/11
Department of Bioengineering, Imperial College London, UK
15. Self-organisation in biology: Cytoplasmic organelle formation 11/11
Mathematical Institute, University of Oxford, UK
14. Self-organised structures in biology: from protein amyloids to cytoplasmic organelle formation 11/11
Laboratoire interdisciplinaire de Physique, Grenoble, France
13. Self-organised structures in biology: from protein amyloids to cytoplasmic organelle formation 10/11
Laboratoire de Physique Théorique, Toulouse, France
12. Self-organised structures in biology: from protein amyloids to cytoplasmic organelle formation 09/11
Biological Physics Group, Imperial College London, UK
11. Self-Organisation in Biology 06/11
Department of Mathematics, University of Sussex, UK
10. Self-Organisation in Molecular Biology 06/11
Centre for Complexity Sciences, University of Warwick, UK
9. Protein aggregation phenomena 11/10
Department of Physiology, McGill University, Canada
8. The physics of protein amyloid formation 08/10
Department of Physics and Astronomy, University of Edinburgh, UK

7. The Physics of Protein Amyloid Formation 01/10
 Department of Biological Physics, Max Planck Institute for the Physics of Complex Systems, Dresden, Germany
6. Protein amyloid self-assembly: Nonequilibrium dynamics 10/08
 Department of Nonlinear Dynamics, Max Planck Institute for Dynamics and Self-Organization, Göttingen, Germany
5. Protein amyloid self-assembly: Thermodynamics and kinetics 10/08
 Department of Biological Physics, Max Planck Institute for the Physics of Complex Systems, Dresden, Germany
4. Modelling fluids using dynamical density functional methods 01/08
 Soft-Matter Group Seminar, Sub-Department of Theoretical Physics, University of Oxford, UK
3. Protein amyloid self-assembly 03/07
 Computing Laboratory, University of Oxford, UK
2. Dynamical and structural studies of protein amyloid formation 12/06
 Zhou Peiyuan Center for Applied Mathematics, Tsinghua University, China
1. Search methods in quantum computation 02/06
 Department of Computer Science, Aston University, UK

PUBLICATIONS

Summary: 73 papers in refereed journals (47 as corresponding or co-corresponding author), 2 refereed conference proceeding papers, 2 book chapters, and 2 lay articles

Total citations: 3066, h-index: 30, 52 papers with over 10 citations [Google Scholar]

Selected recent refereed publications (since 2019)

[C.F. Lee = corresponding or co-corresponding author]

10. P. Jentsch and C.F. Lee
Critical phenomena in compressible polar active fluids: Dynamical and functional renormalization group studies
Physical Review Research 5, 023061
9. A. Cairoli, A. Spenlehauer, D.R. Overby, and C.F. Lee (2023)
Model of inverse bleb growth explains giant vacuole dynamics during cell mechanoadaptation
PNAS Nexus 2, pgac304
8. L. Chen, C.F. Lee, A. Maitra, and J. Toner (2022)
Packed swarms on dirt: two dimensional incompressible flocks with quenched and annealed disorder
Physical Review Letters 129, 188004
[Featured in an News & Views article in Nature and in Physics Magazine, PRL Editors' suggestion]
7. A. Killeen, T. Bertrand and C.F. Lee (2022)
Polar Fluctuations Lead to Extensile Nematic Behavior in Confluent Tissues
Physical Review Letters 128, 078001
[Featured in Physics Magazine, Editors' suggestion]
6. A.W. Folkmann, A. Putnam, C.F. Lee and G. Seydoux (2021)
Regulation of biomolecular condensates by interfacial protein clusters
Science 373, 1218–1224
[Highlighted in a Perspective article in Science]
5. D. Nesbitt, G. Pruessner and C.F. Lee (2021)
Uncovering novel phase transitions in dense dry polar active fluids using a lattice Boltzmann method
New Journal of Physics 23, 043047
4. L. Chen, C.F. Lee and John Toner (2020)
Moving, reproducing, and dying beyond Flatland: Malthusian flocks in dimensions $d > 2$
Physical Review Letters 125, 098003
3. L. Pytowski, C.F. Lee, A.C. Foley, , D.J. Vaux and L. Jean (2020)
Liquid-liquid phase separation of type II diabetes amylin triggers hydrogelation and aggregation
Proc. Natl. Acad. Sci. U.S.A. 117, 12050–12061
2. B. Partridge and C.F. Lee (2019)
Critical motility-induced phase separation belongs to the Ising universality class
Physical Review Letters 123, 068002
1. C.A. Weber, D. Zwicker, F. Jülicher and C.F. Lee (2019)
Physics of Active Emulsions
Reports on Progress in Physics 82, 064601

Refereed journal papers (full list)

[* = Joint first authorship, C.F. Lee = corresponding or co-corresponding author]

73. P. Jentsch and C.F. Lee (2023)
Critical phenomena in compressible polar active fluids: Dynamical and functional renormalization group studies
Physical Review Research 5, 023061

72. A. Cairoli, A. Spenlehauer, D.R. Overby, and C.F. Lee (2023)
Model of inverse bleb growth explains giant vacuole dynamics during cell mechanoadaptation
PNAS Nexus 2, pgac304
71. L. Chen, C.F. Lee, A. Maitra, and J. Toner (2022)
Incompressible polar active fluids with quenched disorder in dimensions $d > 2$
Physical Review Letters 129, 198001
70. L. Chen, C.F. Lee, A. Maitra, and J. Toner (2022)
Packed swarms on dirt: two dimensional incompressible flocks with quenched and annealed disorder
Physical Review Letters 129, 188004
[Featured in an News & Views article in Nature and in Physics Magazine, PRL Editors' suggestion]
69. L. Chen, C.F. Lee, A. Maitra, and J. Toner (2022)
Hydrodynamic theory of two-dimensional incompressible polar active fluids with quenched and annealed disorder
Physical Review E 106, 044608
68. B. Partridge, S. Gonzalez Anton, R. Khorshed, G. Adams, C. Pospori, C. Lo Celso, and C.F. Lee (2022)
Heterogeneous run-and-tumble motion accounts for transient non-Gaussian super-diffusion in haematopoietic multi-potent progenitor cells
PLoS ONE 17, e0272587
67. T. Bertrand and C.F. Lee (2022) **[Letter]**
Diversity of phase transitions and phase separations in active fluids
Physical Review Research 4, L022046
66. C. Pirillo, F. Tissot, F. Birch, S. Gonzalez Anton, M. Haltalli, V. Tini, I. Kong, B. Partridge, C. Pospori, K. Keeshan, S. Santamaria, E. Hawkins, B. Falini, A. Marra, D. Duarte, C.F. Lee, E. Roberts, and C. Lo Celso (2022)
Metalloproteinase inhibition reduces AML growth, prevents stem cell loss and improves chemotherapy effectiveness
Blood Advances 6, 3126–3141
65. C.F. Lee (2022)
An Infinite Set of Integral Formulae for Polar, Nematic, and Higher Order Structures at the Interface of Motility-Induced Phase Separation
New Journal of Physics 24, 043010
64. A. Killeen, T. Bertrand and C.F. Lee (2022)
Polar Fluctuations Lead to Extensile Nematic Behavior in Confluent Tissues
Physical Review Letters 128, 078001
[Featured in Physics Magazine, Editors' suggestion]
63. C.F. Lee (2021)
Scaling Law and Universal Drop Size Distribution of Coarsening in Conversion-Limited Phase Separation
Physical Review Research 3, 043081
62. A.W. Folkmann, A. Putnam, C.F. Lee and G. Seydoux (2021)
Regulation of biomolecular condensates by interfacial protein clusters
Science 373, 1218–1224
[Highlighted in a Perspective article in Science]
61. D. Nesbitt, G. Pruessner and C.F. Lee (2021)
Uncovering novel phase transitions in dense dry polar active fluids using a lattice Boltzmann method
New Journal of Physics 23, 043047
60. L. Chen, C.F. Lee and John Toner (2020)
Moving, reproducing, and dying beyond Flatland: Malthusian flocks in dimensions $d > 2$

Physical Review Letters 125, 098003

59. L. Chen, C.F. Lee and John Toner (2020)
A novel nonequilibrium state of matter: a $d = 4 - \epsilon$ expansion study of Malthusian flocks
Physical Review E 102, 022610
58. L. Pytowski, C.F. Lee, A.C. Foley, , D.J. Vaux and L. Jean (2020)
Liquid-liquid phase separation of type II diabetes amylin triggers hydrogelation and aggregation
Proc. Natl. Acad. Sci. U.S.A. 117, 12050–12061
57. B. Partridge and C.F. Lee (2019)
Critical motility-induced phase separation belongs to the Ising universality class
Physical Review Letters 123, 068002
56. P. Sartori and C.F. Lee (2019)
Scaling behaviour of non-equilibrium planar N -atic spin systems under weak fluctuations
New Journal of Physics 21, 073064
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